

Supraventricular Tachycardia

To be told that your child has any kind of heart problem is a distressing experience, but it is particularly difficult for many of us to deal with attacks of a very fast heart rhythm.

A baby's heart beat is much faster than an adult's – you may remember hearing how fast it was before he or she was born. As the child gets older it will slow down until it reaches the normal adult rate of around 65 to 75 beats per minute.

Like an adult's, a baby's pulse will vary with what is going on – slower when sleeping, increasing with crying, eating and so on.

What is SVT?

A very fast heart rate is called a tachycardia. In children the most common kind of tachycardia is Supraventricular Tachycardia – SVT for short.

The heart is a muscle with four hollow sections, the chambers. The top two are called the atrial chambers, and the lower two are the ventricles.

During a normal heart beat, the atria contract at the same time to squeeze blood into the ventricles, and then the ventricles contract together to push unoxygenated blood to the lungs and to circulate oxygenated blood around the body.

The heart muscle contracts when an electric impulse is generated in the atria and travels across the AV Node (the normal pathway) to the ventricles.

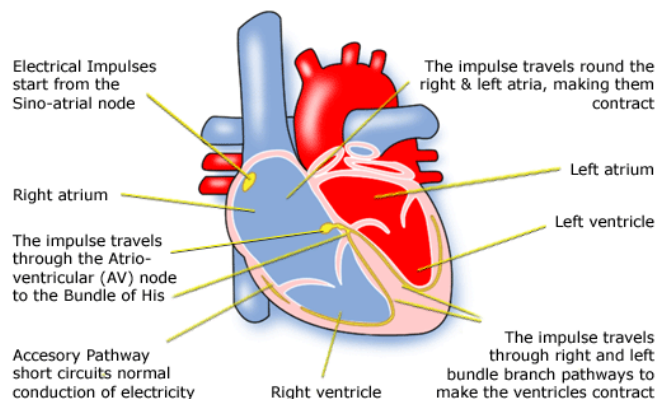
When the cause of an arrhythmia is within the atria, it is called a Supraventricular (above the ventricles) Tachycardia.

SVT in children can be present at (or even before) birth. Some kinds, such as Wolff–Parkinson-White Syndrome may, rarely, run in families with otherwise normal hearts. They can occur with some forms of heart defect, such as Ebstein's Anomaly.

Some types of SVT only occur after heart surgery, particularly after operations, like the Fontan, that change the way blood circulates within the heart.

Fig 1 – SVT

Supraventricular Tachycardia



Re-entry SVT

Re-entry SVT happens when the normal impulse from the atria to the ventricles returns back to the atria via an additional (abnormal) pathway. This creates a circular movement of electrical impulses from atria to ventricles to atria ... and so on. This causes the heart to race quite suddenly for seconds, minutes or hours.

a) Accessory pathway SVT

The common form of re-entry SVT is caused by an extra pathway in the heart

that is separate from the normal electrical pathway. If the extra pathway shows up on ECG (electrocardiogram) while the child is resting it is known as Wolff-Parkinson-White Syndrome. In many others, the accessory pathway can only be seen on an ECG during an attack of tachycardia.

b) AV nodal tachycardia

This less common form of re-entry tachycardia is not usually found in very young children. It is due to an additional pathway in the AV node itself. This form of tachycardia is not easy to recognise on an ECG.

Atrial tachycardia

Occasionally a tiny spot within the atria decides to produce very rapid impulses, which are faster than the normal rhythm. This can start and stop at unpredictable intervals. If the attacks continue for long periods of time, and it is not treated, the heart muscle can be weakened. A fast form of this is known as atrial flutter, and this is especially common after heart surgery.

What to look out for

The most common symptom that people seem to notice in babies is that they can see a blood vessel in the neck twitching. Most children will be pale and breathe faster. Toddlers may be irritable and then tired. Children who can talk might say they have a funny or sore feeling in their chest, or tummy if they haven't quite got the difference sorted out yet.

An attack can last for seconds or hours – but any feeling of weakness or illness should go as soon as the heart rhythm is back to normal. Many children are remarkably well during these attacks, although some have discomfort and weakness.

Although SVT attacks can be distressing to you or your child, remember they are rarely life threatening.

How SVT is treated

It is important that you get written information from your child's cardiologist about the condition. You or the older child must know what to do in the case of an attack – some babies go back into a normal rhythm if a wet cold towel is wrapped around their heads. Older children may be able to stop it with a cold fizzy drink, by making their ears pop, or by taking slow deep breaths.

Medicines

Your child may be prescribed medicine for treating SVT although it may be a while before the right dose is established. Some of the drugs can have side effects – in particular some parents notice that their children have nightmares, are difficult to feed, or have become very sensitive to sunlight.

Cardioversion

There are stronger medicines that can be given in hospital if your child has a prolonged attack. If these do not work, it may be necessary to shock the heart into a normal rhythm under general anaesthetic (cardioversion). Although this may sound frightening it is a simple and effective treatment.

Longer term, most children with SVT in their first year of life come off medication as they get older and have no further problems.

Radio frequency ablation

For older children with an accessory pathway, who need to be on medication for the foreseeable future, there may be the chance of cutting through the extra

circuit. This hospital procedure is called a radio frequency ablation. It involves a catheter, a fine tube, being inserted into a vein and up to the heart where it identifies the pathway. This is then destroyed using radio frequency. Although this technique takes several hours, it only needs a short hospital stay.

Ablation has a high success rate in curing the SVT. Rarely there can be problems with destroying the normal circuit, resulting in the need for a pacemaker. This risk arises when the accessory pathway is close to the AV node, or when the SVT is due to an additional pathway in the node itself – AV nodal tachycardia.

Your child at home

You may find it very difficult to deal with this problem when you first get your child

home. Some parents are terrified of allowing their child to cry in case it starts off an attack – others dare not leave their child during the night, because they fear they may miss an attack.

It is very important that you are confident enough to know that you can leave your child to cry or to sleep. There is

monitoring equipment available if it is necessary in your case – ask the outreach nurse, cardiac liaison nurse or ward sister at the paediatric cardiology unit. Keep the telephone number of the hospital to hand so that you can call them if you need to.

If your child is being looked after by another person, such as a babysitter or teacher, make sure that they have the relevant information.

Please contact CHF if you have suggested amendments or changes as we like to keep our information sheets relevant and up-to-date.

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